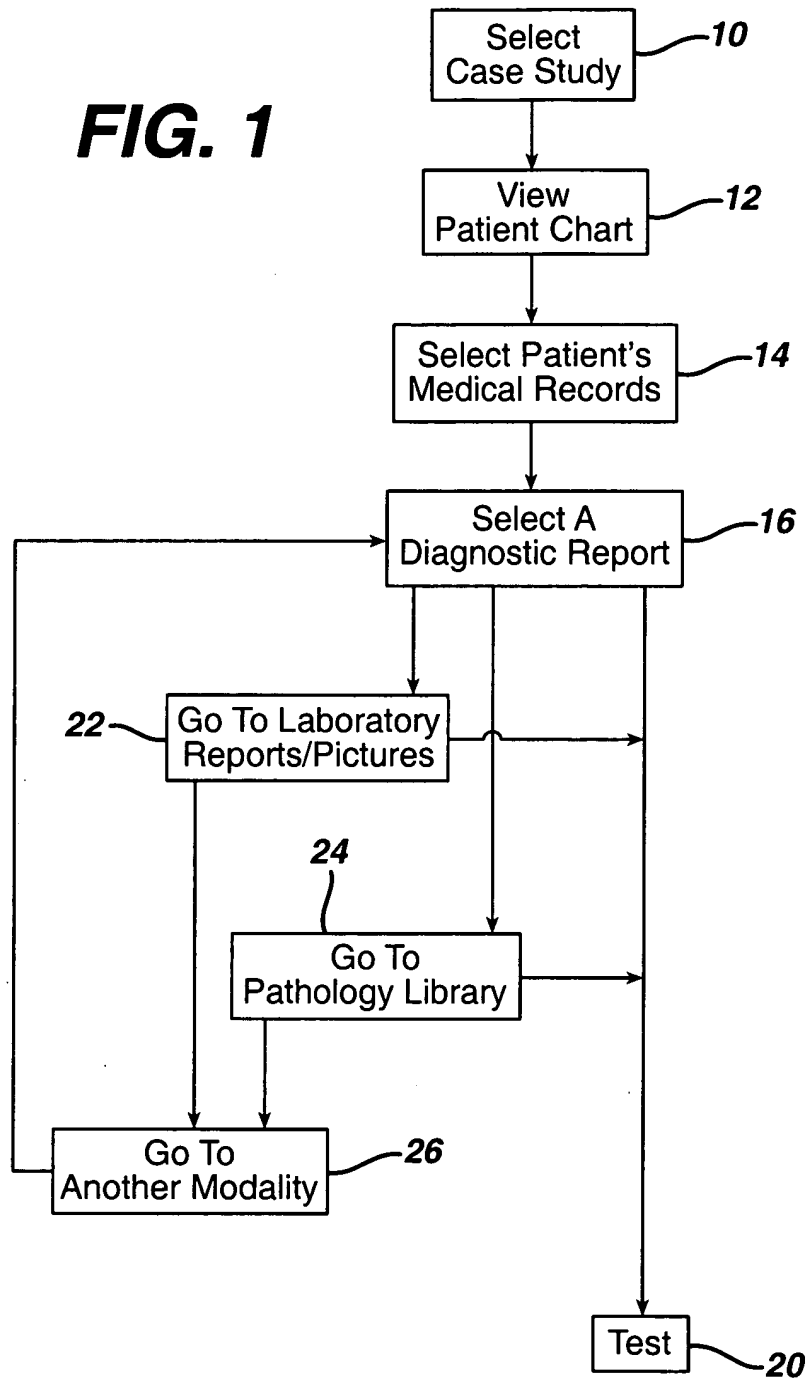




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FIG. 1



File Edit View Favorites Tools Help	Back Forward Stop Refresh Home Search Favorites History Mail Print Edit	Address http://www.atl.com/ATLLearningCenter/OnlineCaseStudies/Vascular/Vascintro.asp
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ATL	A Philips Medical Systems Company	WE ARE ULTRASOUND®	eStore
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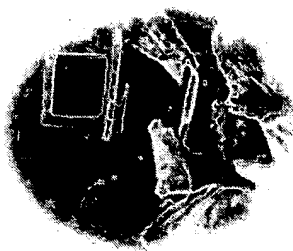
About Us	Customer Care	Product Solutions	Advanced Apps	Learning Center	Employment
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Case Studies

Vascular

These case studies have been approved by the Society of Diagnostic Medical Sonographers for 1.0 credit. These credits are accepted for laboratory accreditation and are accepted by the ARDMS, AART (Category A), and AMA (Category II).

- Vascular Case Study #1 - Carotid Body Tumor**
Darrin Cournoyea, BSc, RDMS, RVT
Peterborough Vascular Lab, Peterborough, Ontario, Canada
- Vascular Case Study #2 - Right Popliteal Artery False Aneurysm with an Arterio-Venous Fistula**
Darrin Cournoyea, BSc, RDMS, RVT
Peterborough Vascular Lab, Peterborough, Ontario, Canada



QUICK SEARCH

Learning Center

- >> Case Studies
- >> About Learning Center
- >> ATL Conferences
- >> Resource Guide
- >> Interactive Learning
- >> Image Library
- >> Protocol Guides

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FIG. 3

The screenshot displays the Philips Medical Systems website. At the top, a navigation bar includes links for Home, Search, Site Index, Contact, Learning Center, and eStore. Below this, a large banner reads "WE ARE ULTRASOUND" with the Philips logo. To the right of the banner is a vertical menu with buttons for Medical Radiology, Laboratory Pathology, Nuclear Medicine, X-Ray, MRI, Angiography, Ultrasound, and Computed Tomography. A red arrow labeled "30" points to the "Ultrasound" button. Below the banner, a section titled "The following learning exercise provides information regarding Carotid Body Tumor. The information is presented using a case study format. By reviewing the medical history and test results of several diagnostic modalities the characteristics of the pathology are examined." is followed by a list of four tasks: 1. Describe the role of ultrasound in the assessment of carotid body tumor. 2. List the typical ultrasound findings of carotid body tumor. 3. Describe the typical signs and symptoms of carotid body tumor. 4. List other pathologies that may be considered as a differential diagnosis for carotid body tumor. Below the list, a paragraph states: "At any time the personal notes button can be used to collect information regarding the pathology. These notes can then be printed as a summary of the case study for future reference. All practitioners of ultrasound can benefit from this case study review which illustrates the unique information that each imaging modality, clinical exam or test provides to reach a diagnostic conclusion." A "TEST" button is located at the bottom right. The bottom of the page features a "QUICK SEARCH" bar and a "Learning Center" section with links to Case Studies, About Learning Center, ATL Conferences, Resource Guide, Interactive Learning, Image Library, and Protocol Guides.

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites History Mail Print Edit

Address http://www.atl.com/ATLLearningCenter/OnlineCaseStudies/Vascular/expand/objective.asp

WE ARE ULTRASOUND

Home | Search | Site Index | Contact | Learning Center | eStore | Employment

Medical Radiology Laboratory Pathology Nuclear Medicine X-Ray MRI Angiography Ultrasound Computed Tomography

30

The following learning exercise provides information regarding **Carotid Body Tumor**. The information is presented using a case study format. By reviewing the medical history and test results of several diagnostic modalities the characteristics of the pathology are examined.

Following the review of this information as well as the discussion provided in the library the learner will be able to:

1. Describe the role of ultrasound in the assessment of carotid body tumor.
2. List the typical ultrasound findings of carotid body tumor.
3. Describe the typical signs and symptoms of carotid body tumor.
4. List other pathologies that may be considered as a differential diagnosis for carotid body tumor.

At any time the personal notes button can be used to collect information regarding the pathology. These notes can then be printed as a summary of the case study for future reference. All practitioners of ultrasound can benefit from this case study review which illustrates the unique information that each imaging modality, clinical exam or test provides to reach a diagnostic conclusion.

The patient chart tabs above allow access to all test results. Please click on one to begin the case study review. When you feel you have collected adequate information from the test results and library please proceed to the test.

TEST

QUICK SEARCH

Learning Center

- Case Studies
- About Learning Center
- ATL Conferences
- Resource Guide
- Interactive Learning
- Image Library
- Protocol Guides

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FIG. 4

The screenshot displays the ATL Medical Systems website interface. At the top, a navigation bar includes links for Home, Search, Site Index, and Contact. Below this, a horizontal menu lists various services: About Us, Customer Care, Product Solutions, Learning Center, and eStore. The main content area is titled "WE ARE ULTRASOUND" and features a sidebar with a "QUICK SEARCH" box and a "Learning Center" dropdown menu. The central text area contains a "Medical History" section, followed by a "Clinical History" paragraph, and then an "Exam Report" section. A "Medications" list is provided at the bottom. The page is marked with a "32" in the top left corner and a "TEST" label in the bottom right corner.

Medical History

Clinical History: The patient is an obese female born in 1932. She quit smoking cigarettes in 1993 but did smoke for 45 pack years. She is currently taking medication to control hypertension, hyperlipidemia, diabetes mellitus, and the occasional angina attack. She has a strong family history of diabetes and atherosclerotic disease. The patient had a right common iliac artery transluminal dilatation in 1987, an appendectomy in 1942 and a previous problem with peptic ulcers in 1975.

The patient is asymptomatic, but has been experiencing some intermittent bilateral eye blurriness in the last month, possibly related to her diabetes. Blood pressure is 154/90 and no carotid bruits are present. The chest is clear and no abnormal abdominal palpations felt. Pulses for the carotid, radial, femoral and popliteal arteries are a 2+. The pedal pulses are weak with a grading of 1.

Exam Report: Considering the patient's strong family history of atherosclerotic disease and the patient's own risk factors such as hypertension, hyperlipidemia, diabetes, peripheral vascular disease, coronary artery disease, obesity and smoking, a carotid artery Doppler ultrasound has been ordered to assess the carotid arteries.

Medications: Acetylsalicylic Acid, Atenolol, Docusate Sodium, Zocor, Estrogen, Provera, Oxazepam, Kenral, Quinine Sulphate, Nitroderm Patch, Metformin and Glyburide.

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FIG. 5

The screenshot displays the ATL Medical Systems website interface. At the top, a navigation bar includes links for 'Home', 'About Us', 'Customer Care', 'Product Solutions', 'Advanced Apps', 'Learning Center', and 'eStore'. Below this, a large banner reads 'WE ARE ULTRASOUND'. To the right of the banner is a vertical menu listing various medical products: 'Medical Accounts', 'Laboratory Pathology', 'Medical Imaging', 'X-Ray', 'Angiography', 'Ultrasound', and 'Cardiovascular Technology'. A 'View Library' button is located below the menu. The main content area features a 'QUICK SEARCH' bar and a list of links: 'Case Studies', 'About Learning Center', 'ATL Conferences', 'Resource Guide', 'Interactive Learning', 'Image Library', and 'Protocol Guides'. The page is titled 'Examination Report-Cerebral Angiography' and contains three paragraphs of text. A 'TEST' button is located at the bottom right of the page.

Examination Report-Cerebral Angiography

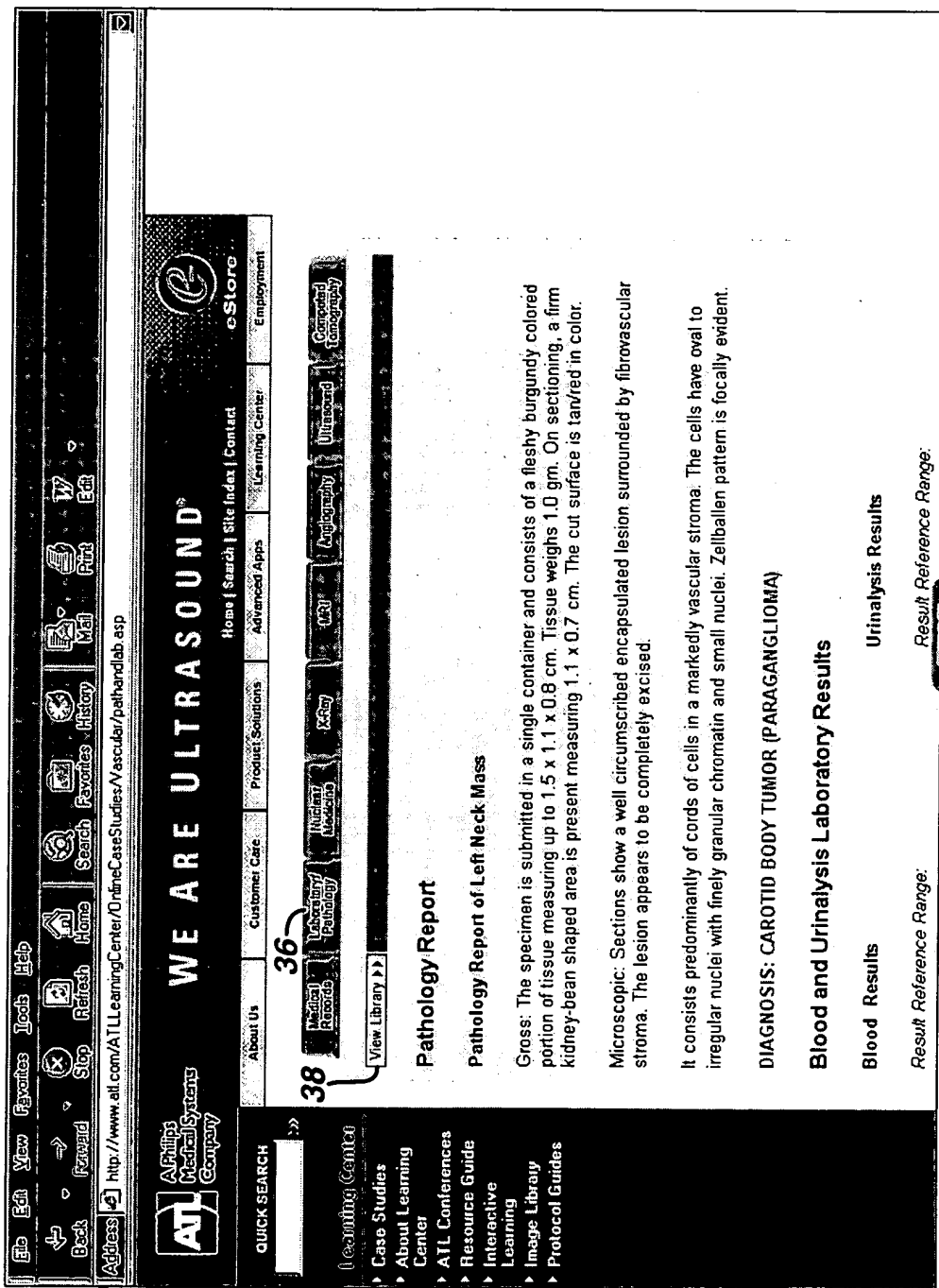
The study was carried out from a right femoral puncture and no complications were encountered. At the end of the procedure, the patient had noticed some numbness in the right foot. This actually had occurred during the examination, fairly early on and this was likely due to a partial anesthesia of the femoral nerve.

The patient developed a bit of numbness in the right hand, predominantly in the third periphery of the digits towards the end of the procedure. This may have been related to spasm in the left vertebral artery, which did occur during the examination. It is possible that a small embolus occurred during catheterization of the left cerebral vessels, but her vessels are quite smooth and the catheterizations went quite easily. In any case, both of these symptoms were resolving as the patient was being observed in the surgical outpatient unit.

Selective right carotid and right vertebral angiography revealed relatively normal vessels. In particular, there was no collateral flow from branches of these vessels over to the lesion adjacent to the left carotid bifurcation.

Selective left vertebral angiography did not reveal any abnormalities or supply to the above mentioned left carotid bifurcation tumor.

TEST



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FIG. 7

The screenshot displays the ATL Medical Systems website. The top navigation bar includes links for Home, Search, Site Index, Contact, eStore, Employment, Learning Center, Advanced Apps, Product Solutions, Customer Care, and About Us. The main header features the ATL logo and the slogan "WE ARE ULTRASOUND". Below this, a horizontal menu lists various medical specialties: Medical Records, Laboratory/Pathology, Nuclear Medicine, X-Ray, MRI, Angiography, Ultrasound, and Computed Tomography. The central content area is titled "Library" and contains a section "Discussion on Carotid Body Tumors". This section includes a sub-header "What is a Carotid Body Tumor?" followed by a detailed paragraph about Carotid Body Tumors (CBTs), their location, growth, and clinical presentation. A "TEST" button is visible at the bottom right of the text area. On the left side of the page, there is a "QUICK SEARCH" box and a "Learning Center" sidebar with links to Case Studies, About Learning Center, ATL Conferences, Resource Guide, Interactive Learning, Image Library, and Protocol Guides.

QUICK SEARCH

Learning Center

- ▶ Case Studies
- ▶ About Learning Center
- ▶ ATL Conferences
- ▶ Resource Guide
- ▶ Interactive Learning
- ▶ Image Library
- ▶ Protocol Guides

Library

Discussion on Carotid Body Tumors

What is a Carotid Body Tumor?

A carotid body tumor (CBT) is a neoplasm of a carotid body chemoreceptor located at the bifurcation of the common carotid artery into the internal carotid and external carotid arteries. The normal size of a carotid body is 5 x 3 x 2 mm. This slow growing tumor has a rich vascular supply fed primarily by the ECA and its branches. The vertebral and thyrocervical arteries can also feed these tumors. Percutaneous needle aspiration of these tumors is strongly contraindicated due to the risk of hemorrhage. The tumor does not have a true capsule but is well circumscribed. Its color is reddish brown and has a rubbery consistency. The tumor sits in the notch between the ICA and ECA, therefore as the tumor grows it plays these arteries.

CBTs have been classified and described into 3 groups based on anatomic observations. Group I tumors are small and easily removed because they are not well adhered to the carotid vessels. Group II tumors are moderately larger with more difficult surgical excisions due to more extensive attachments. Group III tumors are very large and completely involve both the ICA and ECA. Complete arterial resection and grafting is often necessary.

CBTs are slow growing benign tumors that may be familial (autosomal dominant) or idiopathic. CBTs are usually unilateral but can also be bilateral with a 5% incidence for sporadic tumors and a

TEST

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FIG. 8

The screenshot shows the ATL Medical Systems website. The top navigation bar includes links for Home, Search, Site Index, Contact, dStore, Employment, Learning Center, Advanced Apps, Product Solutions, Customer Care, About Us, Medical Research, Laboratory Pathology, Nuclear Medicine, XRay, MR, Angiography, Ultrasound, and Computed Tomography. The main content area features a large banner that reads "WE ARE ULTRASOUND" with the ATL Medical Systems logo. Below the banner is a table with three questions and their respective answers.

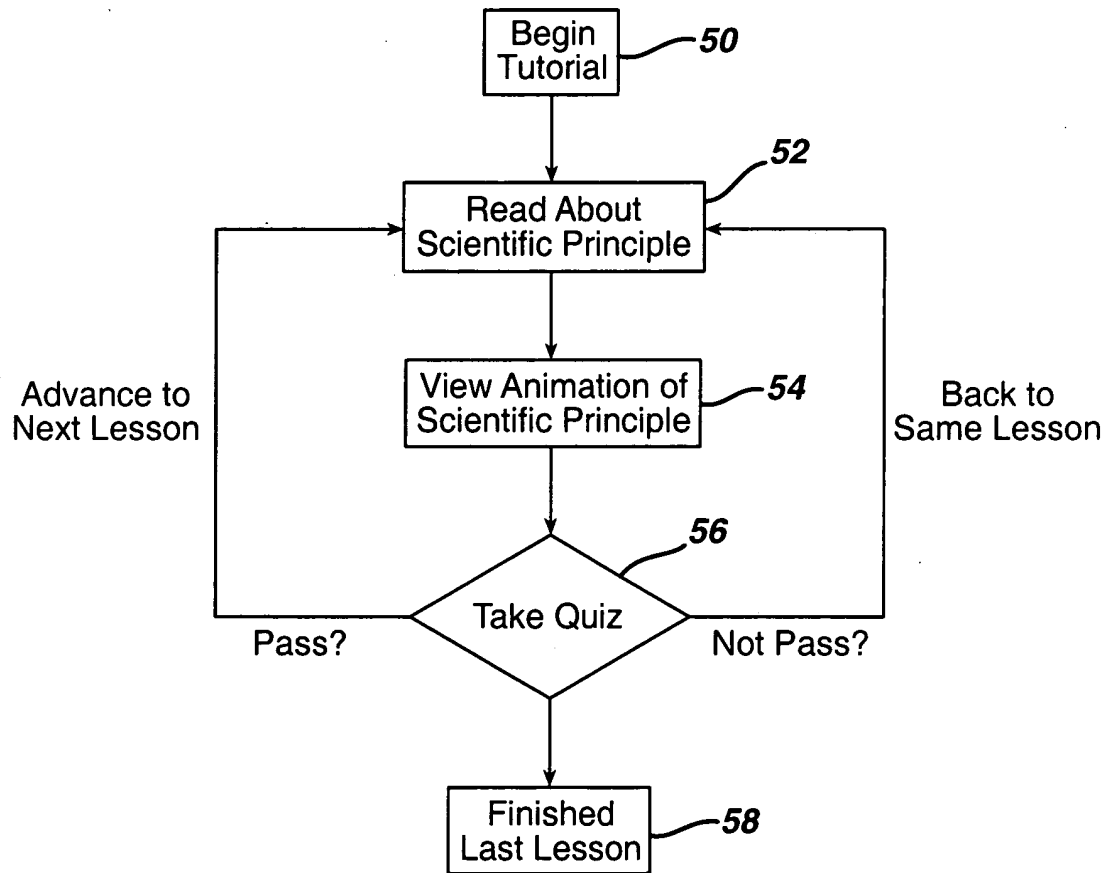
TEST	Question	Answer
1	The following test is multiple choice. Select the answer for each question by clicking on the button preceding your choice. A passing score is 70% correct answers.	<p>The vascular area demonstrated with the angiogram at the left carotid bifurcation would most likely be fed by?</p> <p><input type="radio"/> Branches off the internal carotid artery</p> <p><input type="radio"/> Branches off the external carotid artery</p> <p><input type="radio"/> Branches off the vertebral artery</p> <p><input type="radio"/> Branches off the thyrocervical artery</p>
2	The carotid body tumor is typically located between the:	<p><input type="radio"/> vertebral and subclavian arteries</p> <p><input type="radio"/> carotid and subclavian arteries</p> <p><input type="radio"/> external carotid and common carotid arteries</p> <p><input type="radio"/> external carotid and internal carotid arteries</p>
3	A carotid body tumor can be identified with ultrasound as	a.

The sidebar on the left contains a "QUICK SEARCH" box and a "Learning Center" menu with the following items:

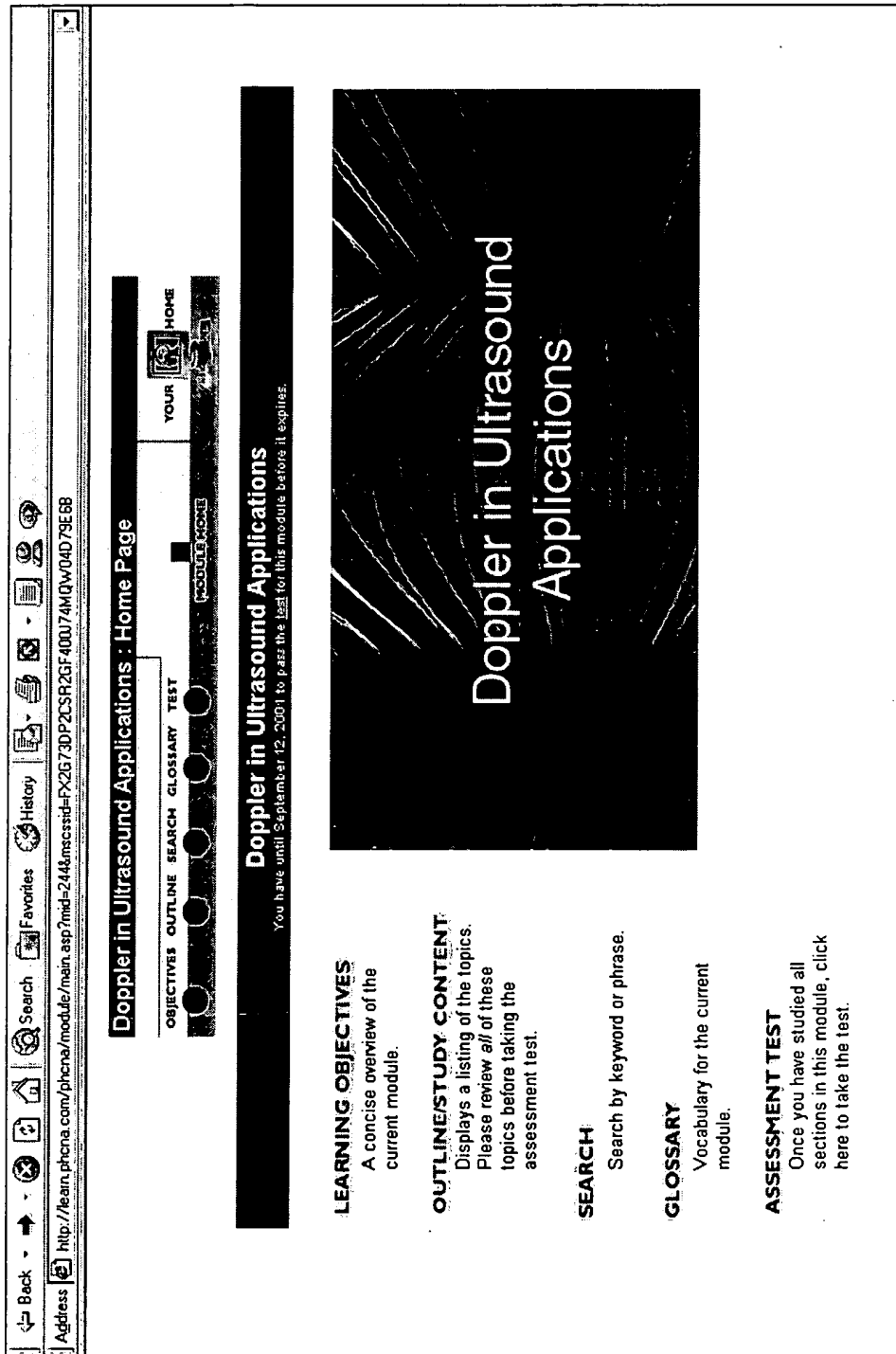
- Case Studies
- About Learning Center
- ATL Conferences
- Resource Guide
- Interactive Learning
- Image Library
- Protocol Guides

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FIG. 9

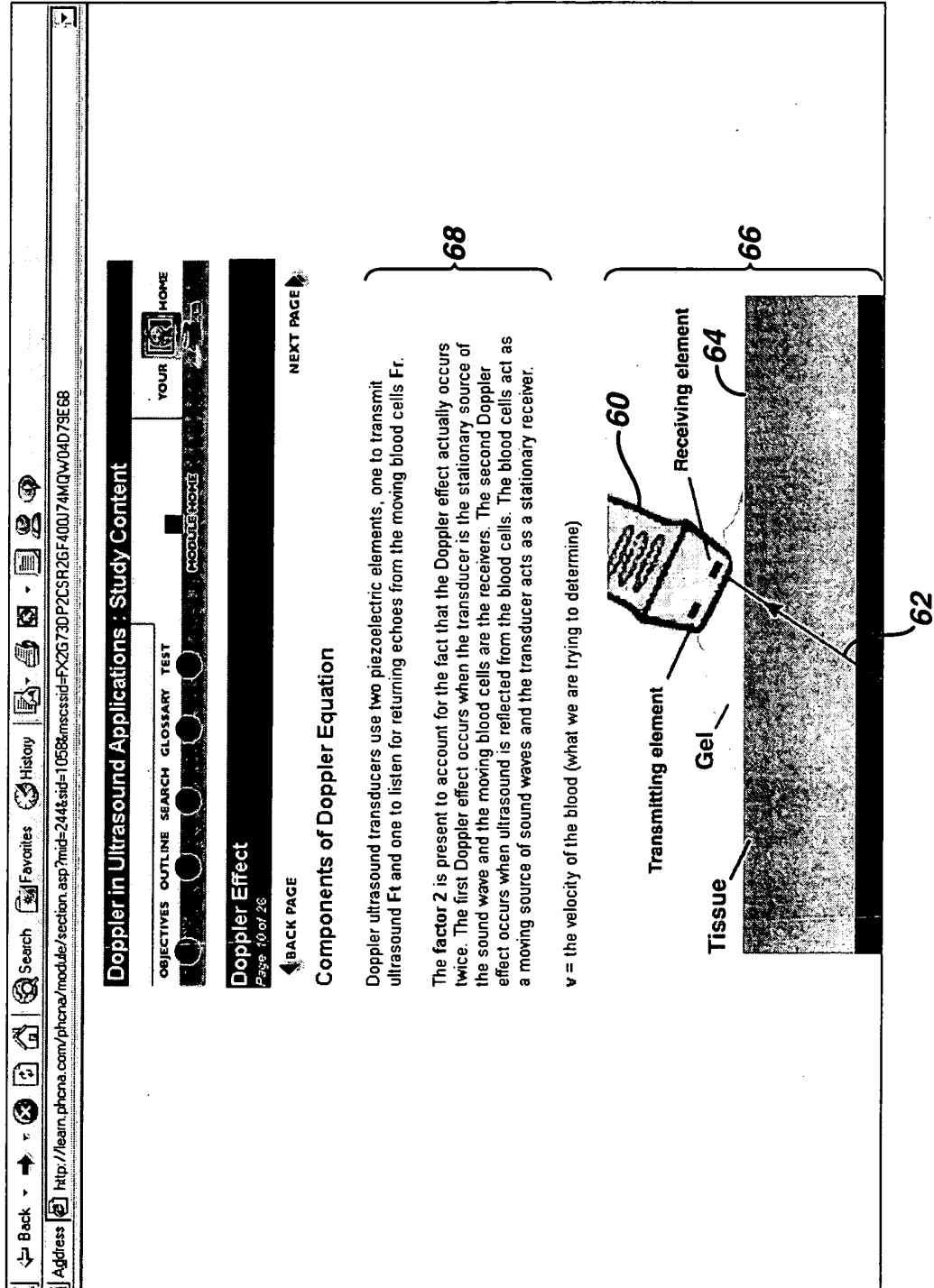


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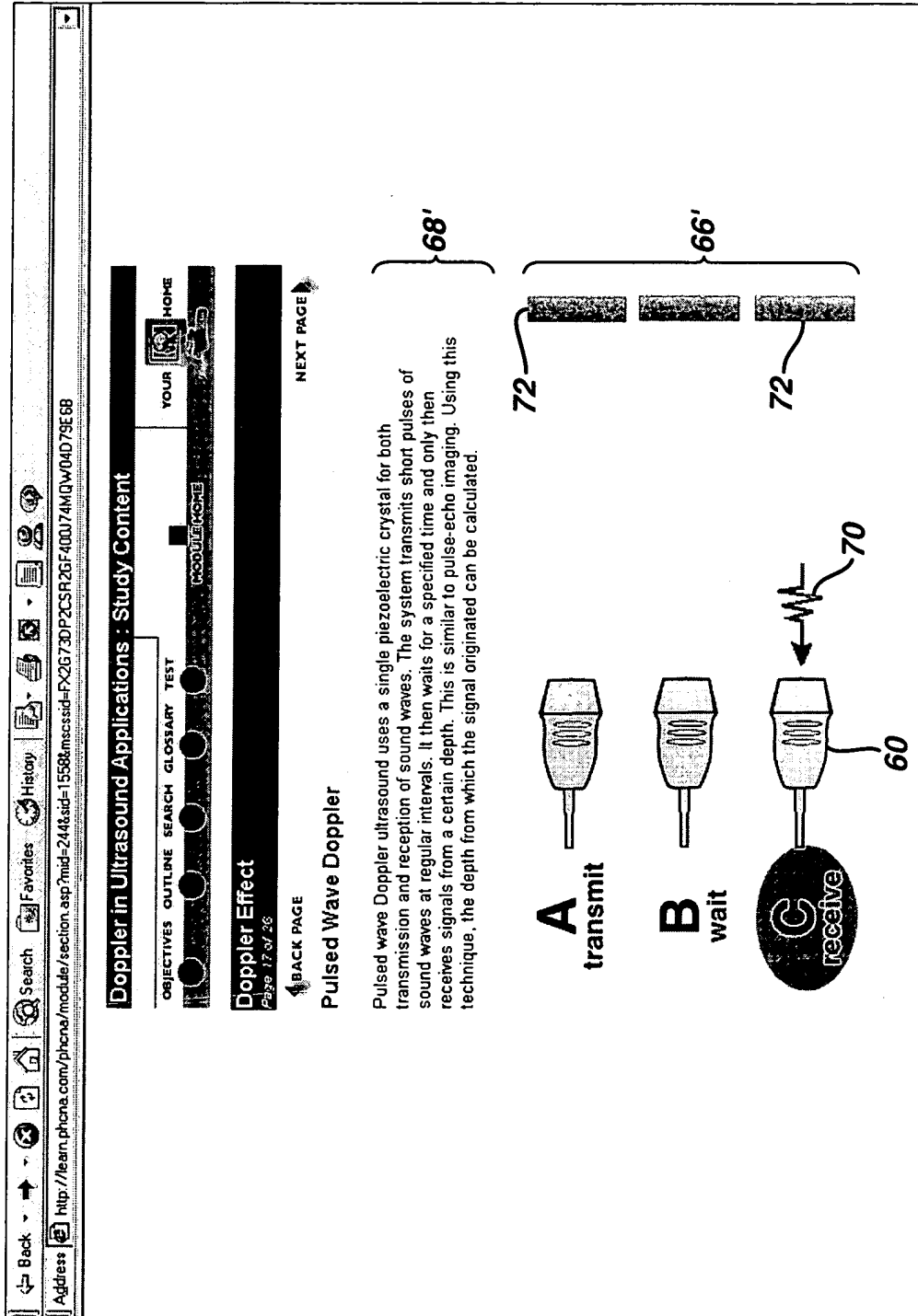
FIG. 10

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FIG. 11



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FIG. 12

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FIG. 13



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FIG. 14

The screenshot shows a web browser window with the address bar displaying: <http://learn.phona.com/phona/module/section.asp?mid=250&id=1569&mccsid=FX2G73DP2CSR2GF400J74MQW04D79E68>. The page title is "Doppler Ultrasound Signal Analysis and Optimization : Study Content".

The main content area is titled "Analysis of Doppler Signal" and includes a section on "Maximum Velocity Measurements". The text explains that the Doppler equation can be used in duplex imaging to convert frequencies into velocities. It states that the angle between the Doppler beam and the blood vessel can be estimated, and that analysis of the components of the Doppler waveform shows that many velocities are displayed in the spectrum and these velocities vary with time, due to the cardiac cycle.

The text continues: "The value most commonly used for the measurement of velocity is peak systolic flow. This is the maximum velocity in the spectrum at peak systole. Maximum velocity can also be measured at end diastole. These velocity measurements represent the fastest moving blood flow in the center of the vessel and do not include the slower moving flow near the vessel wall."

A diagram labeled "80" shows a cross-section of a vessel with a red dot indicating the measurement point. The diagram is labeled "Flow-Capt Map" and "Flow-Capt Map 1".

The sidebar on the right contains a search bar and a list of topics: OBJECTIVES, OUTLINE, SEARCH, GLOSSARY, TEST, and YOUR HOME. The "YOUR HOME" link is highlighted.

At the bottom of the page, there is a red dot and the text: "Drag the red dot into the highlighted area and drop it".